REPORT

OF

Congaree Navigation Study Committee

OF THE

South Carolina General Assembly

COLUMBIA, S. C.
1960

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CONGAREE NAVIGATION STUDY COMMITTEE

OF THE

SOUTH CAROLINA GENERAL ASSEMBLY

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LETTER OF TRANSMITTAL

February 15, 1960.

The Honorable Ernest F. Hollings,
Governor of South Carolina
and
Members of the General Assembly of South Carolina:

As a result of the activities of this, and the Wateree Committee, two comprehensive studies of river navigation are now underway and another is being contemplated. The first of these is a two-year engineering and economic study by the U. S. Corps of Engineers. The second is a survey of potential users of the river by the State Ports Authority.

A final report of the Committee will not be possible until these two studies are complete. However, the Committee takes pleasure in submitting this preliminary report of its activities and findings during 1959.

Respectfully submitted,

SENATE MEMBERS:

Walter J. Bristow, Jr.,

John William Green, *V.-Chm.,*

John A. Martin.

HOUSE MEMBERS:

C. Heyward Belser,

Ryan C. Shealy,

Clyde H. Turner.

GOVERNOR APPOINTEES:

Leroy Strasburger, *Chairman,*

Carlton W. Truax, *Secretary,*

W. Carl Walsh.

SUMMARY OF COMMITTEE ACTIVITIES

The special legislative committee created last year to investigate extending navigable channels on the Congaree River held or attended 15 meetings in Columbia, Charleston, Pinopolis, Greenville, Anderson and Washington, and made one trip by barge from Cayce through the Santee-Cooper locks to Charleston.

At these meetings the committee received testimony from experts in the field of transportation and industrial development. These experts agreed that the opening of the river is of primary importance to the future industrial growth of the industrially barren Central Portion of the State.

The committee interviewed business leaders, Chamber of Commerce executives and Development Board members from 10 river basin counties. These also feel that navigation on the Congaree and Wateree Rivers would contribute substantially to industrial development.

The committee investigated river development in other Southeastern states and was convinced by comparison that navigation is both feasible and practical. Many of the committee members were in fact distressed that South Carolina has lagged so far behind other states of the area in these respects.

The committee worked with the Congressional Delegation to get a Federal Appropriation of $29,200.00 to begin a study of the river system by the U. S. Corps of Engineers. This study is now in progress and should be completed by the end of 1960. This first phase of a comprehensive study of the river basin is being limited to a study of navigation. This limitation of the study is being made at the specific request of the two special study committees of the General Assembly who went to Washington for this purpose.

The committee, working with the Corps of Engineers, and the South Carolina State Ports Authority, initiated a survey of potential users of the river.

The committee studied all available previous reports of the United States Army Corps of Engineers on the Santee River Basin. None of these, in as far as the committee was able to determine, considered navigation alone, but were reports of comprehensive river development; a study of these reports indicates that navigation is practical and feasible without extensive damming and flooding, and without hydro-electric development.

The committee has received outstanding support from the State Ports Authority, the South Carolina Public Service Authority, the

State Development Board and other state and local agencies. Without their help and genuine interest this report would not be possible. It is safe to report that all of these agencies believe that navigation is not only feasible and practical, but is of major importance to the future development of South Carolina.

GENERAL CONCLUSIONS

Two general conclusions have resulted from the committee's study of the navigational possibilities of the Congaree River.

A. IT APPEARS FEASIBLE AND PRACTICAL, AND

B. IT WOULD MEAN MUCH TO THE ECONOMY OF SOUTH CAROLINA

Of the first we quote from the findings of the U. S. District Court for the Eastern District of South Carolina in the transcript of Records of the U. S. Circuit Court of Appeals, Fourth Circuit, in *South Carolina Power and Light v. South Carolina Public Service Authority,* Docket No. 4252, page No. 2347 and 2357.

"When this navigation (previous successful commercial use of the river between 1913 and 1917) was being carried on over the Congaree and Santee, it was done under great difficulty. . . . The difficulties were encountered in two places, the upper reaches of the Congaree River where there are shoals, and in the lower reaches of the Santee. *The shoals in the Congaree could be removed at no great expense* but the shallow water in the lower reaches of the Santee presented difficulty which would be removed at great cost to the Federal Government. . . . In short, money spent on improvement of the Congaree will be spent to a much greater advantage after construction of the Santee-Cooper Project than before. . . ."

Of course, the Santee-Cooper Project has been completed since the above findings were made, giving a channel of 10 ft. depth in the lower 122 miles of the river. This leaves only the upper 47 miles, or the relatively inexpensive area just below Columbia. From our investigations, we believe this situation is little changed and that navigation can now readily be provided from our growing seaport city of Charleston all the way to our Midlands.

As to the second under General Conclusions, we quote the Hammer Report, prepared by Hammer & Co., a firm of industrialist devel-

opment consultants who made a survey of the Columbia area's industrial potential during 1959, with the reminder that what the report says about the Columbia area would just as well apply to any community along the waterway.

"As an inland port, Columbia could well become one of the great industrial centers of the Southeast. Waterways are becoming increasingly important in the American economy. . . . America's inland waterways are carrying unprecedented loads. . . . The possibility of the Congaree River development must definitely be taken into account in any analysis of the industrial development potential of metropolitan Columbia in the future. It can become the single most important factor in this development."

COMMITTEE RECOMMENDATIONS

The committee recommends the following:

1. That the South Carolina Congressional Delegation be urged to express their interest in and follow closely the study which the U. S. Army Corps of Engineers is now making of the Congaree and Wateree Rivers, and that they be asked to find a way to finance the necessary improvements assuming a favorable report by the Engineers.

2. That efforts be initiated immediately to have the railroad trestle over the Cooper River at Strawberry Landing improved to conform to the present standard of bridges over navigable streams. This requires a minimum of a 50 ft. span.

3. That the Charter of the State Ports Authority be amended to extend its responsibility and authority to include the development of navigation and ports as far inland as possible on the streams of our State.

4. That the committee established in 1959 to study the feasibility and practicability of navigation on the Congaree River be continued under different instructions to cooperate with and coordinate the activities of the various agencies now working towards opening the river for navigation.

THE REPORT

PROLOGUE

History was written by rivers. Throughout the world, civilizations grew along river banks and ocean shores. The rivers and oceans of three continents provided the cradles of ancient civilizations and modern western culture expanded first along the river banks and harbors of the new world.

In the new world the genius of man allowed cities to move from the shoreline as the railroads caused to be built such cities as Charlotte, Greenville and Atlanta.

No one should underestimate the contributions made by the railroads in lacing the nation together and in the revolution which prepared the United States for the Twentieth Century. The railroads, seeking a route across the mountains to the west, skirted the foothills of the Southeast and strung a route through the cities mentioned above. Atlanta grew from a stake driven by a railroad survey team to become the largest city of the South, boasting a population today of one million people.

As the railroads became more efficient, coastwise ship traffic virtually ceased. Ports, once having the promise of becoming large cities, became instead smaller resort towns, and river channels, which once carried most of the commerce of an area, became clogged with debris and shallow with washed sand bars. Finally, World War I brought coastwise shipping to a complete halt and river lines, once thriving, were forced out of business.

"We finally abandoned navigation of the Santee River because the coastwise boats stopped going to Georgetown". . . . "With the type of boats we had, we didn't have any way at all at that time to get to Charleston. The Inter-Coastal Waterway was not open."(Transcript of the Record, U. S. Court of Appeals, Fourth Circuit, *Carolina Light & Power Co. v. S. C. Public Service Authority,* Docket No. 4252, pages 1296, 1205).

The development of trucks and modern highways spread the revolution even further. These brought the revolution to the remotest village of the land. Highways built such cities as Fort Worth, Oklahoma City and Los Angeles, and it appeared that the age of water commerce had come to a dead end.

But those who buried the barge and the tugboat failed to reckon with three facts of modern life. First, they failed to consider the spiraling cost of shipping bulk freight by either train or truck; second, they failed to consider modern improvements in tugs and

barges and a whole family of new products which are shipped easier by water; and, thirdly, they failed to reckon with such developments as the intercoastal waterway.

As for freight costs, it should be sufficient to quote figures released in 1959 by Dun's Review of Modern Industry. These figures state that, since 1946, truckload rates have increased by 58 per cent and have increased twice as fast as the cost of living. This report says that these changes have made the cost of transportation the third costliest item in the manufacturing processes today. As an example of what this means to modern industry, one company now investigating sites for a new plant in South Carolina estimates that a navigable river would save them $800,000.00 a year on the freight costs of their bulk raw materials.[1]

Of the second, there has been a revolution in tugboats since the last woodburning steamer plied the Congaree in 1917. Today it takes half a horsepower to move a ton by water, but seven horsepower are necessary to move a ton by train and ten to move it by truck.[2]

The third development, the Inter-Coastal Waterway, provided coastal cities with a safe and adequate water route for barge and small boat traffic and as a result coastwise shipping was revived. Barges began moving traffic all along the coast from New York to Texas and ports such as Georgetown, Port Royal and Charleston began to see new commercial life.

Thus, after a century of subordination, rivers are again being used as a primary route of commerce. Today "approximately 1,700 individual companies operate some 19,000 pieces of equipment over the country's inland waterways employing an estimated 80,000 persons aboard the fleet, while approximately an equal number of persons are engaged in shore side employment to keep the fleet operative." [3]

Barges, of course, have their limitations; chiefly the limitation of speed. Trucks, trains and airplanes are faster, and, for some commodities, speed is a controlling factor.

But slow moving barges have their place in commerce for the same reason that trucks and trains continue to exist in a day when jets are crossing the nation in hours. There are commodities transported constantly where speed is relatively unimportant. These can be or-

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[1] Senator John West, testimony at U. S. Army Corps of Engineers Hearing, Columbia, December 10, 1959.

[2] Wilbur Smith and Associates, Traffic Engineers, Columbia, S. C.

[3] American Waterways Operators, Inc., 1025 Conn. Ave., Washington 6, D. C.

dered far in advance of actual need, moved slowly and economically by water and stockpiled for future use. These are the bulk commodities which are being shipped by water all over the eastern and midwestern parts of the nation today.

Therefore, there is an important place in the modern economy for this fourth dimension in transportation—water. Cities on the rivers of the nation are becoming more important and long dormant ports are coming again to life. It is safe to predict that, unless some radical new advances are made in transportation, great cities of the future will be cities with all four freight dimensions—rail, highway, air and water.

The increasing importance of four dimensional commerce is illustrated by the fact that total traffic on inland waterways increased from 28 billion ton miles in 1946 to 109 billion ton miles in 1959 and is expected to rise to about 170 billion ton miles by 1953.[4] The table on the following page compares this growth with other modes of transportation.

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[4] The American Waterways Operators, Inc., 1025 Connecticut Ave., N. W., Washington, D. C.

TON MILES OF FREIGHT TRAFFIC TRANSPORTED IN THE UNITED STATES BY RAILWAYS, MOTOR TRUCKS, GREAT LAKES, INLAND WATERWAYS AND PIPE LINES, CALENDAR YEARS 1940, 1945, 1950, 1956 AND 1957 AND PERCENTAGES OF TOTAL

		Railways [a]		Motor Trucks		Great Lakes		Inland Waterways		Pipe Lines	
Year	*Total (1)*	*Ton Miles (1)*	*% of Total*	*Ton Miles (1)*	*% of Total*	*Ton Miles (1)*	*% of Total*	*Ton Miles (1)*	*% of Total*	*Ton Miles (1)*	*% of Total*
1940	608	375	61.7	51	8.4	96	15.8	22	3.6	64	10.5
1945	1,006	684	68.0	56	5.6	113	11.2	30	3.0	123	12.2
1950	1,010	591	58.5	126	12.5	112	11.1	52	5.1	129	12.8
1956	1,355	651	48.0	254	18.8	110	8.1	110	8.1	230	17.0
1957	1,347	622	46.1	260	19.3	117	8.7	115	8.6	233	17.3

[a] Exclusive of mail and express traffic.

(1) In billions.

Source: Annual Reports of the Interstate Commerce Commission and the Chief of Engineers, U. S. Army.

Prepared by: The American Waterways Operators, Inc., 1025 Connecticut Ave., N. W., Washington, D. C.

SOUTH CAROLINA'S RIVER POTENTIAL

Its Favored Position:

In regards to abundance of water, South Carolina is in a most favored position. It is, in fact, in a class by itself.

Approximately 50 streams in our state have a water flow of sufficient quantity to merit the title "river" (see map page 16 following). These "rivers" are, for the most part, tributaries to three large river basins, the Pee Dee, the Santee and the Savannah. The Pee Dee River Basin is the second largest river basin and the Santee River Basin is the third largest river basin on the Atlantic Coast of the United States in square miles drained.[4]

U. S. Weather Bureau figures show that these rivers drain an area of the United States which has a rainfall that is only exceeded by the precipitation in the extreme northwestern portion of the nation.

In addition, rivers are no respectors of state lines, and the rivers of this State draw their water from an area more than twice the size of the State of South Carolina.

South Carolina's Three Important Advantages:

South Carolina's abundance of water, discussed above, is a great advantage which it has over many other states.

A second advantage is that the Congaree River System thrusts potentially navigable waters deep into the industrial Piedmont of the Southeast. In fact, potentially navigable streams come closer to this industrial belt of population in South Carolina than at any other point in the South.[5]

A third advantage is that a great deal of work has already been done to make the rivers of the Midlands commercially navigable. South Carolina, in the Santee-Cooper Project, at one time led the way in modern river navigation development with a channel at least 10 feet deep from Charleston to within 47 miles of Columbia. However, the project was not completed, though, during periods of normal rainfall, the Congaree River is already navigable five days a week to Grandby Landing just below Columbia.

With some adjustments, these rivers stand ready now for practical commercial navigation, and, we believe these adjustments are im-

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[4] Eighth annual report, Research, Planning & Development Board of S. C. (1952-1953) P. 35.

[5] Wilbur Smith & Associates, Traffic Engineers.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STATE OF SOUTH CAROLINA

Scale 1:500,000

J. F. Hosmer, Cartographic Engineer
Compiled in 1939

portant enough to the businessmen and industrialists of the Midlands to make it extremely worthwhile to put barges on the rivers.

THE CONGAREE'S OTHER ADVANTAGES:

The fact that Charleston is the best deep water port on the South Atlantic coast is another distinct advantage which the Cooper-Santee-Wateree-Congaree River System has over neighboring river systems.

The presence of substantial population centers and potential river cargoes at both ends of the Midlands River System are two further advantages.

THE CONGAREE'S POTENTIAL CARGOES:

In order to determine what items might be shipped on the Congaree River, it was necessary for the committee to study cargoes moved on other river systems of the Southeast and compare them with imports and exports of the Midlands area. A quick survey of these cargoes indicates that the central part of South Carolina not only has a market ready to buy commodities brought up the river, but also has a ready supply of exports which are shipped conveniently and economically by water in other areas.

IMPORTS:

Considering imports first we find that other inland cities bring in by barge from the coast such products as gasoline, propane, oil, butane, asphalt and other petroleum products, machinery, flour, salt, sugar, newsprint, bulk raw materials, steel, chrome, fertlizer components, chemicals and ores.[6]

By far the most important general type of import from a tonnage standpoint on almost all the navigable rivers of the Atlantic Coast is petroleum products. These products are moved regularly on the Cape Fear River in North Carolina to Fayetteville. By comparing this city as a population center with Columbia as a population center, it becomes evident that the market and the demand for these barge-borne cargoes should be greater in South Carolina's Midlands than in the still coastal area of that North Carolina city.

EXPORTS:

Turning to exports, we again find that South Carolina has many products which are being moved by river in other sections

[6] U. S. Army Corps of Engineers Water Resources Development Brochures.

of the Southeast. These include such products as gravel, sand, brick, concrete, granite, crushed stone, scrap metal, logs, pulpwood, lumber, grains, corn and soybeans.[6]

All of these are produced in abundance in the South Carolina Midlands and they complete the list of all the cargoes that are being shipped on all the rivers of the South Atlantic Coast.

Advantages of River Development to Our Ports:

South Carolina has spent $26 million in the development of its port facilities and these millions are returning to the State more millions in foreign and domestic commerce. These expenditures may be expected to benefit all of South Carolina and parts of other states which are naturally tributary to the seaports of the State. But, the full potential of Georgetown and Charleston will not be realized until the rivers which created these natural harbors to begin with, are developed for commercial navigation. These rivers, in effect, could extend these ports inland to the head of navigation and, by giving them a deeper penetration into the continent, extend their tributary area to a vastly expanded region, thus placing them in a far more favorable position in relation to other ports of the Southeast.

Few South Carolinians realize that Charleston is the closest major seaport to the Chicago-Detroit-Cleveland complex of industrial cities. But more and more shippers are realizing the potentials of this State's fast-growing port and it has moved from 57th to 15th in volume of tonnage handled among the ports of the nation.[7]

The Congaree-Wateree-Santee-Cooper River System, by providing the State and the Port of Charleston with an arm of water commerce reaching close to the mountains and to the industrial cities of Piedmont South and North Carolina, might assist Charleston and other State ports to cover more fully all of Western North Carolina, part of Virginia and across the mountains into the industrial cities of Tennessee and the Ohio River Valley.

Thus if developed to its full potential, the existence of the Cooper-Santee-Congaree-Wateree Rivers System could help make Charleston the most important port between Chesapeake Bay and New Orleans, because this river system could bring water transportation closer to the industrial Piedmont of the Southeast than any other river system of this area.

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[6] U. S. Army Corps of Engineers Water Resources Development Brochures.

[7] State Ports Authority.

Relation of Congaree to Nationwide Distribution:

To understand the contribution a navigable river might have on the development of South Carolina as a major distribution center, it is necessary to examine the location of the Midlands of the State in relation to the rest of the nation.

Because if its location midway between the truck farms of Florida and the mass markets of the New York area, several large trucking companies have already made South Carolina a major "breaking point". The development of the Interstate Highway System may be expected to emphasize the locational advantages of the Columbia-Cayce-West Columbia area as a distribution center because two major interstate highways will intersect at this point. These tie North, South, East and West together in the Midlands of the State. What is not so well known is that a third interstate highway has, in effect, its southern termini at Columbia.

Technically this is the highway which is routed southeast from the Chicago-Cleveland-Detroit combine of cities to Charlotte, N. C. But, South Carolina's Chief Highway Commissioner, Claude McMillan, has indicated that when this road is completed, the State will tie into it with a super-highway from Columbia to the North Carolina State line. This will, in effect, add another 200 miles to this inter-state highway and for all practical purposes it will pass through Columbia and end in Charleston. This combination of three super-highways, which intersect at the possible head of good river navigation, could substantially help make South Carolina a leading distribution center of the eastern half of the United States.

We believe trucking firms with their headquarters in South Carolina realize these facts and therefore will not view the possibility of navigation between Columbia and Charleston as competition, but as an additional feeder of freight to their trucks on this inter-state highway network.

Three South Carolina Rivers:

With proper development, South Carolina has three river systems which might be opened for commercial navigation—the Savannah, the Congaree-Wateree, and the Pee Dee. These rivers carried traffic in the past, and the potential should be larger today because of greater inland industrial growth.

Largely through the efforts of Georgia, the Savannah is now being developed for navigation to North Augusta. However, this river has

become almost exclusively a Georgia River and most of the industrial development has been on the Georgia side.

As for the Congaree-Wateree, we are hopeful that this study will lead to the opening of this central South Carolina river system to commercial navigation.

Finally, if the Pee Dee were opened to Cheraw and Rockingham, N. C. (and judging by the water flow on this river, this is quite possible), Georgetown could possibly supplement Wilmington as a major port serving southeastern North Carolina. This is a possibility because Rockingham and Cheraw would not only serve the area now served by Fayetteville, but would extend that service area 50 miles closer to the industrial Piedmont area.

POSSIBLE INDUSTRIAL DEVELOPMENT:

The development of commercial navigation on the three major river basins of the State should put South Carolina in a key position to attract an entire body of rapidly growing, river-using industries, such as chemicals, plastics, and petroleum related industries, and the location of the State on a pivot between the oil fields of South America and Texas on one hand, and the industrial and population centers of New York and the Great Lakes on the other hand, adds significantly to the State's importance to the petro-chemical industries.

Additional evidence of these possibilities was stated by Philip Hammer, who heads a firm of industrial development consultants which made a comprehensive survey in 1959 of the industrial potential of the Columbia area. In reporting on the development of river navigation, Mr. Hammer stated, "It can be conservatively said that this development would assure the large-scale industrial future of the Columbia area, opening up prospects for many types of basic industries that would otherwise not be available." The report also said that the opening of the Congaree River to commercial navigation can become the single most important factor in industrial expansion of the area.

William Lyles' Letter:

It is only necessary to add here that of the nation's 25 largest cities, 23 are located on navigable waterways.[7a] However, additional thoughts along these lines were ably expressed by Bill Lyles, Chairman of the Columbia-Richland County Industrial Commission. His letter to Colonel Thompson of the Corps of Army Engineers is on the following page.

[7a] Population Statistics from the 1950 National Census.

December 18, 1959

The District Engineer
U. S. Army Engineer District, Charleston
Corps of Engineers
Post Office Box 905
Charleston, South Carolina

Subject: Navigation Studies Congaree River Basin

Dear Sir:

The writer is chairman of our community's industrial Development Commission which is co-sponsored by the Columbia Chamber of Commerce, the City of Columbia, and Richland County. Mr. Philip Stedfast testified on behalf of our commission at your recent hearings concerning possible navigation on the Congaree River. Since conflicting appointments prevented my appearing before you personally, I want to take this opportunity to endorse Mr. Stedfast's statements and to reiterate the commission's intense interest in navigation on the Congaree.

The commission with the assistance of Philip Hammer & Company Associates, economic consultants, has spent almost a year studying the strengths, weaknesses and possible methods of improving our economy. The present and potential affect of the Congaree River has received considerable attention. Our studies have indicated conclusively that, if properly developed to afford navigation, the Congaree would aid tremendously in improving the economy, not only of our immediate area, but of the entire State. It would considerably widen the scope of industries that could be suitably located in the Midlands area. For example, we have recently been in consultation with a major industry that will employ between 3,000 and 4,000 persons that requires a navigable stream. It is considering our area only because of the potentials offered by the Congaree and their belief that these potentials will be developed. The advantages that have accrued to other comparable cities, such as Augusta, Georgia, Fayetteville, North Carolina, Bainbridge, Georgia, and Richmond, Virginia, through development of navigation on their rivers are conclusive evidence to us that navigation on the Congaree would be of tremendous benefit to Columbia.

It appears from our preliminary inquiries that navigation on the Congaree is practical from engineering and economic standpoints and that the benefits would far outweight the few, if any, plausible

objections. It is our earnest hope that your studies may substantiate these opinions and that our community may enjoy the benefits of a navigable stream in the not too distant future.

Sincerely,

W. G. LYLES, *Chairman,*
Industrial Development Commission.

LOST INDUSTRY

There is evidence that the Midlands of South Carolina has lost some industries because traffic was not moving on the rivers of the State.

For example, the American Cyanamid Company, which purchased 1,200 acres on the Congaree River below Cayce a few years ago, built its $100,000,000.00 Creslan plant on the Inter-Coastal Waterway in Florida instead of in South Carolina's Midlands. It has been indicated that the availability of water transportation was one of the primary reasons for building in Florida instead of South Carolina. This company has shown considerable interest in the work of the Congaree Study Committee and has stated that the addition of navigation will add greatly to the attractiveness of the Lexington County site in their plans for the future.

Of interest to the farmers of the State is the report from the State Ports Authority that a large soybean processing company optioned land on Lake Marion in Orangeburg County for a plant. Their plans included the shipment of soybeans by barge from this location to Norfolk, Virginia, but investigation revealed that the 33-foot horizontal span at Strawberry trestle over the Cooper River would not pass barges of sufficient capacity to justify these plans. Therefore, the entire project was dropped and the agriculture economy of the State suffered a loss.

Next it might here be pointed out that soon after the City of Augusta was assured of a nine-foot channel to Savannah, two major companies, the B. F. Goodrich Company and the Continental Can Company, announced plans to locate plants with a total construction cost of about $100,000,000.00 on the Savannah River near this Georgia City.[8] Their plans include using the river to bring in raw materials.

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[8] Augusta Chamber of Commerce.

All of these things must be considered in judging the value of re-establishing commercial navigation on the rivers of South Carolina.

RIVER DEVELOPMENT IN OTHER STATES [9]

SOUTHEASTERN AREA:

In spite of initial advantages over other southeastern states, South Carolina is lagging far behind. For example, northern *Alabama,* through the Tennessee River, now enjoys a rapidly expanding industrial economy ($750 million in new industry since 1946) and this navigable stream, by providing cheap freight rates for midwestern grain, has made northern Alabama and north Georgia the leading poultry producing area in the nation.[10] On Alabama's eastern boundary, work is underway which will provide navigation to Phoenix City, Alabama, and Columbus, Georgia.

The importance of four dimensional commerce is also illustrated by the fact that even Atlanta, far inland, is seeking a water route to the Gulf of Mexico. Here are the words of an *Atlanta Journal* editorial,[11] indicating the great vision of our Georgia neighbors:

RIVER PLANS MOVE ALONG

The campaign to get another dam constructed on the Chattahoochee River near West Point is gathering momentum as the time nears for a feasibility report from the U. S. Corps of Engineers.

Enthusiasm was rekindled a few days ago when the Middle Chattahoochee Development Assn. convened in LaGrange and heard from Corps of Engineer representatives as well as officials of cities and counties all along the river.

The group seemed to profit from a fiery, keynote address by Atlanta's Mayor Hartsfield who has been a longtime supporter of river development and an insistent believer in the goal of one day making the Chattahoochee navigable to Atlanta.

Most of those pushing the building of another dam admit it's still probably a long way off.

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[9] Information on river development in other states is from the U. S. Army Corps of Engineers River Resources Development Brochures.

[10] *The New York Times,* November, 1959.

[11] *Atlanta Journal,* November 8, 1959.

Yet Association President Shaefer Heard of West Point exudes confidence that he'll be around to ride the first river boat into Atlanta.

Mayor Hartsfield was emphatic in telling the river boosters they shouldn't be at all timid about putting the squeeze on Washington for money to build their dam, if it's approved.

He referred to water development taking place in other parts of the country, and noted that even neighboring Alabama is getting ahead of us in capitalizing on river resources.

Full development of the Chattahoochee will not come quickly or easily, but it can be spurred along by cooperative planning and unstinting effort—and that's the kind of leadership the association proposes to give.

Another interesting and pertinent article from the *Atlanta Journal* entitled: "Optimist Believes Barges Will Dock One Day at Atlanta Port" is found at rear of this report.

A further illustration of the importance of water commerce is the fact that at the end of the first year after navigation was provided on the Flint River to Bainbridge, Georgia, a small town more than 100 miles from the coast, traffic on that river doubled the Army Engineer's estimate which justified the cost, and a whole family of river related industries are in the process of being built.[12]

Georgia has also developed other rivers. A study of the possibility of expanding navigation to Macon and Albany is underway and the Georgia Ports Authority is now constructing a $250,000.00 terminal at Augusta to take advantage of the 9-foot channel which is under construction on the Savannah River. Thus, barges operate in a large way on two Georgia rivers and in a smaller way on two others, and work is in progress to extend navigation on these four and to develop navigation on two more.

Virginia now has 4 larger and 5 lesser important rivers open for navigation, and in addition to this, the Federal Government has spent more than $25,000,000.00 on 36 other port projects, some of which are simply the development of fishing harbors.

Florida which has 10 streams now carrying varying amounts of freight, has also had large sums of Federal money spent on resort ports and fishing harbors.

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[12] Hammer & Company, Industrial Consultants.

Two *North Carolina* rivers are used for commercial navigation and there are seven others which have some navigation. The Cape Fear River carries half a million tons of freight annually between Fayetteville and Wilmington; yet this river has an average flow of less than 60 per cent of the average flow of the Congaree at Columbia. We understand that some residents of the Fayetteville area remember times when they could walk across this stream; but, due to modern engineering methods of river control, barges and tugs have been moving up and down this river for the past decade loaded with up to 1,300 tons of freight per barge even during periods of extreme drought. This has been done 24 hours a day, seven days a week although the Cape Fear River has a smaller average flow than the Broad River alone. The average flow on the Broad River at Richtex in Fairfield County is 6,103 cubic feet per second as compared with 4,815 for the Cape Fear River at Fayetteville.[13]

Maps of other states are provided at the end of this report for those who wish to make a detailed study of navigable streams in the southeast.

Other Areas:

In addition to the southeastern states, many others are seeking federal aid for the development of their water resources. For example, a tri-state organization, the Arkansas Basin Development Association, is seeking $100,000,000.00 a year for the next 12 years (one billion, two hundred million dollars) to develop the Arkansas River.[14] If they are successful, barges will operate in western Kansas on the edge of the Rocky Mountains.

Several other examples are the St. Lawrence Seaway which was opened during 1959 at a public cost of millions of dollars and the Inter-Coastal Waterway which now ties together seaports from Texas to New York. In the opinion of the committee, the St. Lawrence Development will undoubtedly affect all Atlantic Coast Ports including Charleston. Yet, while this nationwide river activity has been in progress, South Carolina, with billions of gallons of water a day running through it to the sea, has done almost nothing.

A look at the 1960 Public Work Appropriations Bill passed by Congress during the 1959 session gives the best example of how

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[13] Water flow figures in this report are from the 1957 report of the U. S. Geological Survey.

[14] See quotations from brochure in rear of study.

far behind South Carolina has lagged in its river development program—only $29,200.00 was allocated for South Carolina in a $1,215,000,000.00 bill.

A COMPARISON OF SOUTH CAROLINA RIVERS WITH OTHERS

Statistical Comparison:

On page 27 is a table listing some of the streams of the Southeast which are regularly carrying freight, comparing them in several ways with the Pee Dee, Congaree and Wateree Rivers of South Carolina. These are by no means all of the rivers in use, but the chart is given to illustrate the variety of rivers that have been made navigable by the federal government. Some of these, it must be pointed out, are tidal streams, but others are rivers with deep penetration into the continent.

The average flow is listed in cubic feet per second at or near the head of navigation. The depth of the channel is the shallowest on the course, the length of the waterway is from the mouth of the stream to the head of navigation, and the tonnage is an average figure taken from five recent years. In most cases the last year of the five was a high year indicating the steady growth of water-borne commerce on these streams.

INTERPRETATION OF STATISTICAL COMPARISON:

For the most part the figures in the following schedule speak for themselves. They show that the Congaree River at Columbia and the Wateree River at Camden *compare favorably with other rivers that are today carrying extensive commerce.*

The average flow on the Congaree River at Columbia is 8,027 cubic feet per second according to the figures. This is about five billion gallons a day as against, for example, 2.9 billion gallons a day in the Cape Fear River. Yet navigation is maintained on the Cape Fear River and other similar rivers of the southeast and most of them do not use large multi-purpose hydro-electric impounding dams. Thus the table further demonstrates that *large impounding dams are seldom needed to provide navigation in streams of reasonable flow.*

The table also demonstrates that *the length of the waterway has very little to do with the use.* Some short waterways carry a great deal of traffic, while the longest on the list, the Tombigbee, connecting Birmingham and Mobile, Alabama, carries 3,150,000 tons in an

Streams by States	Average Flow in Cu. Ft. Per Sec.	Depth in Ft.[2]	Miles of Water Route	Miles by Highway	% Difference Water Over Road	Average Annual Tonnage	Cost of Channel[3]	Lowhead Multi-Purpose Dams	Locks and Dams	Cost Per Mile
ALABAMA:										
Tombigbee[4]—Mobile to Birmingham	7,656 at Tuscaloosa	9	462	260	84	3,150,000	$55 Million	0	17	$119,000
FLORIDA:										
Oklawaha	1,961	6	90	...	..	1,600	.....	..	..	.....
					..	707,000 Passengers	.....	..	..	.....
GEORGIA:										
Savannah	10,720	9	199	125	60	70,100	$3,700,000	0	1	$ 18,500
Flint River	8,244	9	...	...	..	.....	.....	1	0	.....
LOUISIANA:										
Ouachita	.....	6.5	351	...	..	168,000	$1,109,000	0	4	$ 3,200
Pearl	8,718	7	60	...	..	174,224	8,274,000	0	3	137,300
NORTH CAROLINA:										
Cape Fear	4,815	7.5	115	75	47	520,000	.....	0	3	$.....
Roanoke River	8,425	8	131	...	..	399,000	$ 404,000	0	0	3,000
SOUTH CAROLINA:										
Congaree (at Columbia)	8,027	..	165	115	43	0	.....	1	0	$.....
Broad	6,103	..	...	...	..	.....	.....	..	..	.....
Saluda	2,966	..	...	...	..	.....	.....	..	..	.....
Wateree (at Camden)	6,413	..	173	125	38	0	.....	1	0	.....
Pee Dee (at Rockingham)	8,103	..	...	...	..	.....	.....	..	..	.....
VIRGINIA:										
James River[5]	7,902	25	94.8	138	..	4,473,725	$6.8 Million	0	1	$ 72,000
Rappahannock	1,688	12	107	...	..	328,000	$ 217,000	0	0	.....
York River System[6]	.....	7	133	...	..	881,000	504,000	0	0	3,800

1 Figures on this chart are from the U. S. Army Corps of Engineers Water Resources Development Brochure and the U. S. Geological Survey.
2 Depth of the channel is at the head of navigation.
3 Figures on construction costs are not given when multi-purpose dams are involved or where work was done prior to inflation.
4 The water flow on the Tombigbee in Alabama is recorded at Tuscaloosa which is about 58 miles below Birmingham, and, therefore, the flow at the head of navigation on this system should not be much more than the Broad River near Columbia or the Wateree River near Camden.
5 The cost of maintaining the James River Channel to Richmond has added up to $6,790,000 and plans are now being considered to make the channel 35 feet deep to open the port of Richmond to ocean-going vessels.
6 Although the York River Project was not complete in 1957, the tonnage that year had risen to 2,564,559 tons.

average year. The length of South Carolina's rivers therefore should not hinder their development in any way.

INCREASING IMPORTANCE OF WATER COMMERCE

The increasing importance of water commerce and the potential which exists for the Midlands waterways of South Carolina is illustrated by the Tombigbee River. The federal government has invested $55,000,000.00 in construction costs and $27,900,000.00 in maintenance costs in this 462-mile water course. Barges traveling this route must pass through 18 locks in 17 dams and these locks are generally smaller than the locks in the Lake Moultrie Dam. An additional drawback to the Tombigbee is that it is 84 per cent longer than the highway route to Mobile.

Yet, in spite of these things, this Alabama river is a major carrier of goods and its value to the state is still increasing. South American iron ores are now being brought up the river to the mills at Birmingham.

To provide an idea of the type and amount of traffic which moves on the Tombigbee River the map-diagram is provided on the following page.

To Illustrate further the increasing importance of water commerce, attention is drawn to the Ouachita and Black River channel in Louisiana and Arkansas to Camden, Arkansas. Although this system has a chanel that is only 6.5 feet deep (which is considered almost inadequate for modern barging), the tonnage on this river has increased from 150,000 to 340,000 in a five-year-period.[15] The graphs shown on pages 31 and 32 clearly demonstrate that water commerce is gaining in importance on these rivers and on the Tombigbee River. Similar graphs could be prepared for most of the navigable rivers of the southeast.

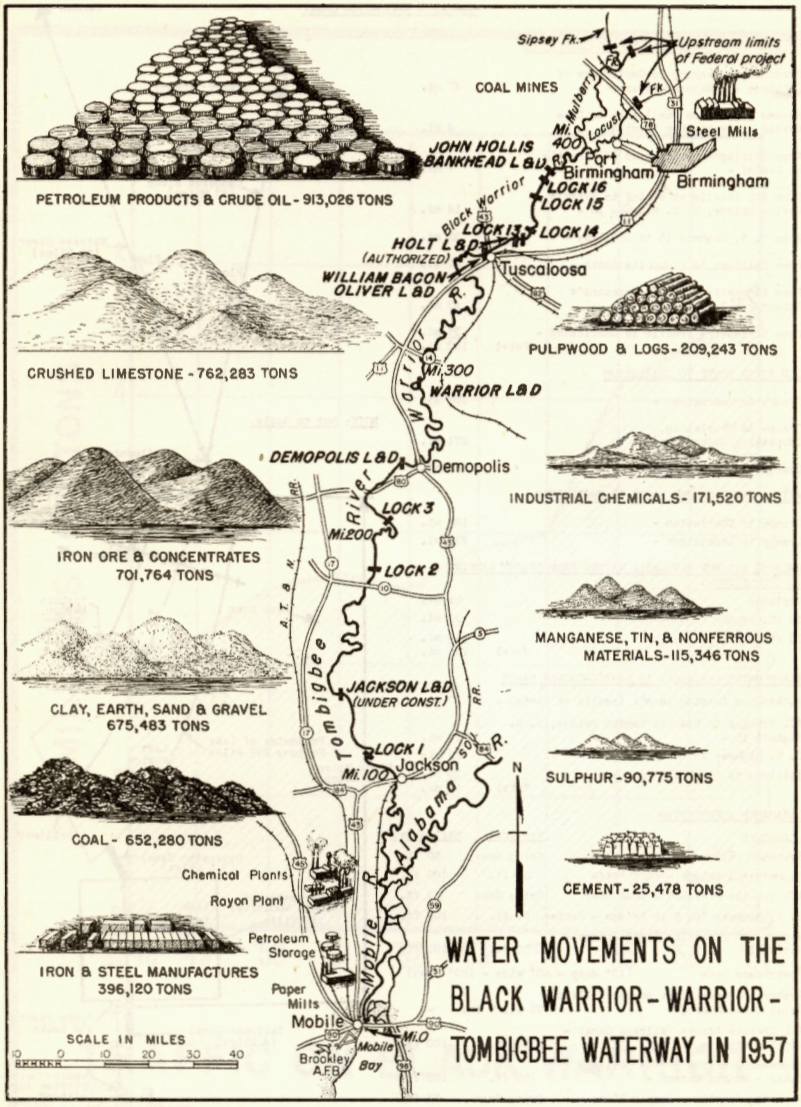
PRACTICABILITY OF CONGAREE NAVIGATION

Preceding sections of this report indicate that navigation is possible; but possible and practical may not necessarily coincide. Three things are necessary to make water-borne commerce practical—water under the barge, a barge itself and cargoes to put on or into the barge.

Is There Sufficient Water?

It is, of course, common knowledge that sufficient water and a channel depth of at least 10 feet is already available from Charleston

[15] All figures on freight, mileage and channel depth are from the U. S. Army Corps of Engineers Water Resources Brochures.



to the confluence of the Congaree and Wateree Rivers near the upper end of Lake Marion, a distance of about 122 miles. This is shown on the navigation chart, prepared by the South Carolina Public Service Authority and the U. S. Army Corps of Engineers, which is located on the following page. Thus, the only area of uncertainty on the Congaree is the short 47 miles between Lake Marion and the Gervais Street Bridge.

HAMMOND'S NAVIGATION CHART

MILEAGE FROM GRANBY LANDING TO CHARLESTON

From Granby Landing to Confluence of Congaree and Wateree Rivers -	47 mi.
Santee River from Confluence to Lake Marion at Buckingham Landing -	4 mi.
From Buckingham Landing to ACL Trestle at Rimini -	7 mi.
From ACL Trestle at Rimini to Francis Marion Bridge, U. S. Highway 15 -	14 mi.
From U. S. Highway 15 to Spillway -	22 mi.
From Spillway to Pinopolis Locks -	20 mi.
From Pinopolis Locks to Seaboard's Strawberry Trestle -	13 mi.
From Strawberry Trestle to Charleston -	35 mi.
Total	162 mi.

OLD RIVER ROUTE TO CHARLESTON

Granby to Georgetown -	207 mi.
Granby to Charleston (Bypassing Georgetown)	271 mi.
Georgetown to Charleston	64 mi.

AFTER SANTEE-COOPER ROUTE TO CHARLESTON

Granby to Charleston -	162 mi.
Granby to Georgetown -	226 mi.

PRESENT MINIMUM NAVIGABLE WATERS FROM GRANBY LANDING TO GEORGETOWN

Variable	51 mi.
10 ft. Depth	21 mi.
12 ft. Depth	154 mi.
Total	226 mi.

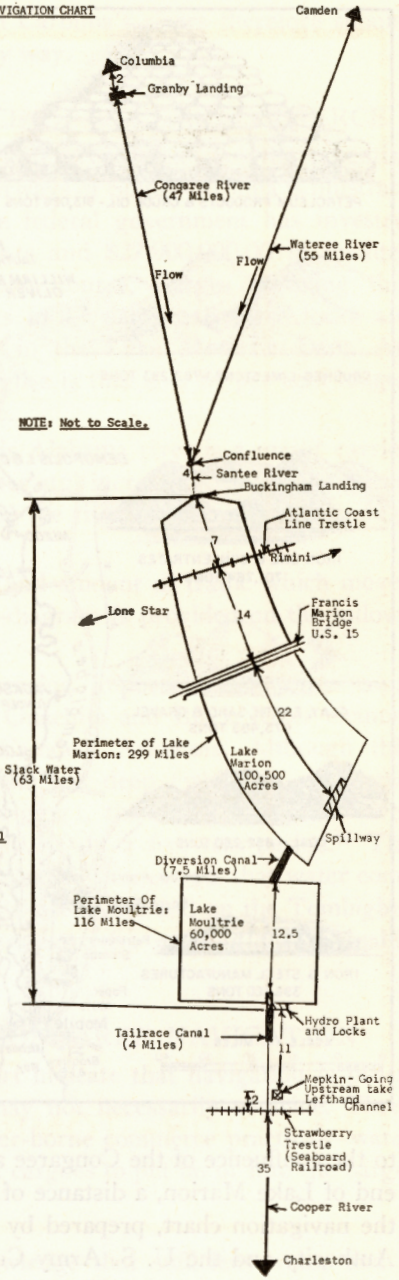
SLACK WATER DISTANCES IN SANTEE-COOPER LAKES

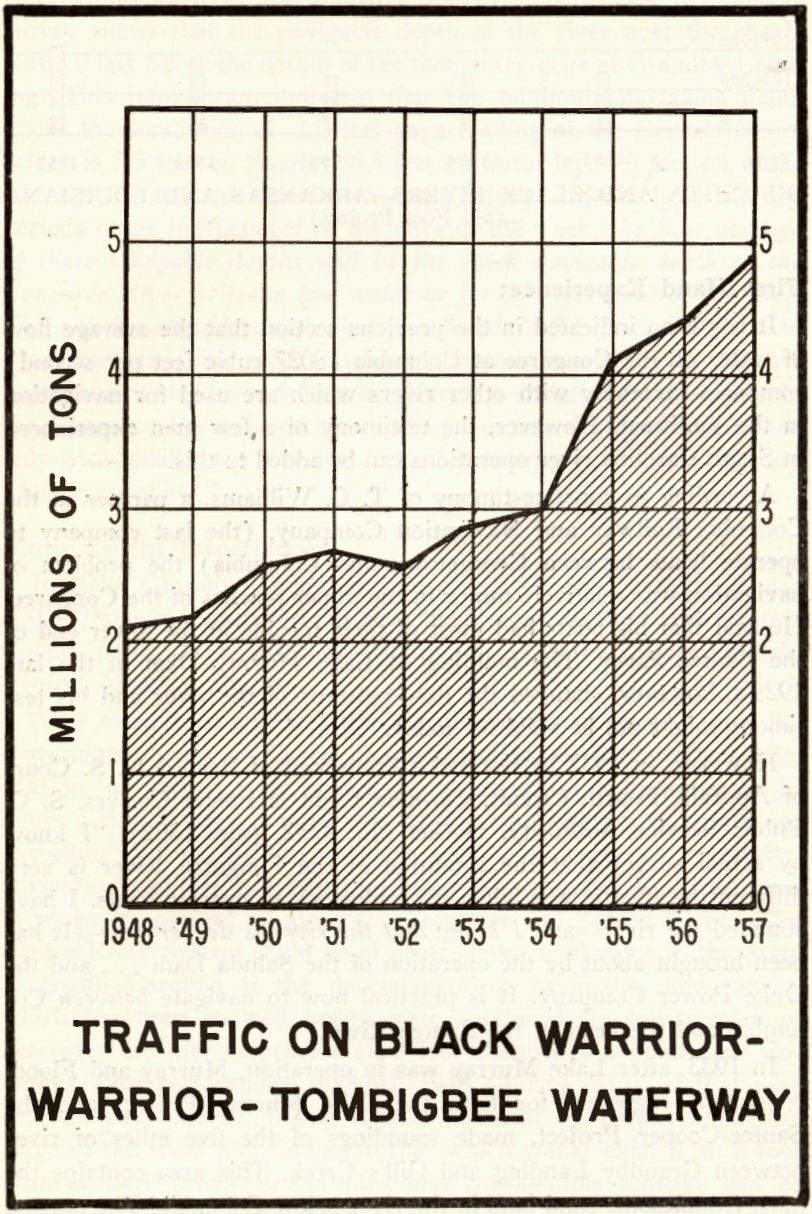
Buckingham Landing to ACL Trestle at Rimini -	7 mi.
ACL Trestle to Francis Marion Bridge, U. S. Highway 15 -	14 mi.
U. S. Highway 15 to Spillway -	22 mi.
Spillway to Pinopolis Lock -	20 mi.
Total	63 mi.

CLEARANCE INFORMATION

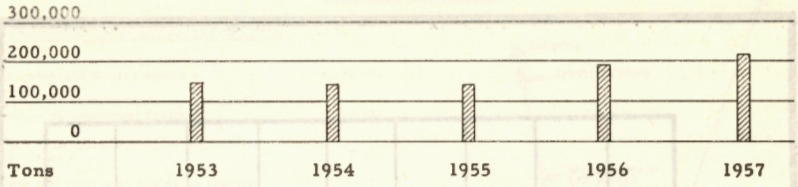
Structure	Vertical	Horizontal
Southern Railway Trestle - Moye	Swing Span	60 ft.
Highway 601 Bridge - Fort Motte	50 ft.	100 ft.
ACL Trestle - Rimini - Lone Star	Swing Span	62 ft.
U. S. Highway 301 & 15 Bridge - Santee	50 ft.	100 ft.
Highway 45 Diversion Canal Bridge - Pineville	50 ft.	100 ft.
Powerhouse Lock	(12' deep - 60' wide - 180' long)	
Authority Power Lines Across Tailrace Canal (Switchyard)	73 ft. 5 in.	-
ACL Trestle Across Tailrace Canal - Moncks Corner -	50 ft.	100 ft.
Highway 52 Bridge Across Tailrace Canal - Moncks Corner -	50 ft.	100 ft.
Seaboard Trestle - Cooper River -	Swing Span	33 ft.

Prepared By General Maintenance Department,
South Carolina Public Service Authority
(8/7/59)





The above graph taken from U. S. Army Engineers Booklet of River Development in State of Alabama



OUACHITA AND BLACK RIVERS—ARKANSAS AND LOUISIANA
(6½ Foot Project)

First Hand Experience:

It has been indicated in the previous section that the average flow of water on the Congaree at Columbia (8027 cubic feet per second) compares favorably with other rivers which are used for navigation in the southeast. However, the testimony of a few men experienced in South Carolina river operations can be added to this.

According to court testimony of T. C. Williams, a partner in the Columbia Railway and Navigation Company, (the last company to operate boats between Georgetown and Columbia) the problem of navigation was relatively minor in the upper reaches of the Congaree. He said that his boats had most of their trouble in the lower end of the Santee River. The building of Lake Murray Dam in the late 1929's, however, changed the flow patterns of the river and his testimony might not be valid for today.

However, in 1937 he testified (Transcript of Record U. S. Court of Appeals, Fourth Circuit, Carolina Light & Power Co. vrs. S. C. Public Service Authority, Docket No. 4252, page 1302), "I know by actual survey that the condition of the Congaree River is very different to what it was when we undertook to operate boats. I have sounded the river—and *I know that the river is deeper now*—It has been brought about by the operation of the Saluda Dam . . . and the Duke Power Company. It is practical now to navigate *between* Columbia and the head of the Santee River."

In 1933, after Lake Murray was in operation, Murray and Flood, consultant engineers for both the Lake Murray Project and the Santee-Cooper Project, made soundings of the five miles of river between Grandby Landing and Gill's Creek. This area contains the most troublesome sand bars in the river below Columbia. The portion of that report dealing with these soundings follows:

"A sounding survey was made on the Congaree River between Grandby Landing and Gill's Creek on October 29, 1933. The depths

recorded are given on the following map of the Congaree River. This survey shows that the navigable depth of the river over the shoals was 5.0 feet below the datum of the temporary gage at Grandby Landing. This information indicates that the minimum navigable depth under the conditions of -1.0 feet gage reading at the Gervais Street bridge is 5.5 feet on Sunday, 6.3 feet on Saturday, 6.9 feet on Monday and 7.7 feet on Tuesday through Friday. Inasmuch as the dry periods occur independent of the days of the week, *the time average of these navigable depths will be the rated navigable depth of the Congaree River at mean low water or for 99.2 per cent of the time. The rated navigable depth thus computed is 7.1 feet.* Contrary to experience in tidal waters, where minimum navigable depths are approached twice each day in the year, the variation of the water in the Congaree River is such that the minimum depth is approached only occasionally and then on Saturday afternoon, Sunday or early Monday morning."

More Recent Experience:

In 1948, Grannis, Thompson and Street Co. of Charlotte moved 400,000 tons of granite rip rap from the Cayce quarries to the Santee-Cooper dams. In a letter describing this operation Craig Gaskell, Project Manager, states:

"Our experience indicates that the Santee River System from the Government Dock at Cayce, South Carolina, to the head of Lake Marion, at normal river stages, is navigable for approximately 12 hours a day, 5 days a week, for marine equipment with drafts not exceeding 5 feet. Bridges are not tended with proper regularity, navigation aids are non-existing, hazards to navigation in the form of snags are present all along the Congaree and Santee Rivers. The Santee River System could be of great commercial value to the State of South Carolina if the development of navigation and power, which has been so well begun were continued by construction of necessary facilities to provide an 8 foot channel to a point near Columbia. Our performance in April 1948 (during April of that year this company moved 40,000 tons of material by barge) when the stage of the river was similar to that which would exist if an 8 foot channel were provided, indicates that considerable tonnage can be moved when water is available."

Would the Waterway be Used?

It is generally conceded that it is more economical to ship by water than by other means unless speed is the controlling factor. But the

question might still be asked, "Would the freight rate difference make it worthwhile to ship cargoes 165 miles by river between the two terminal points as compared with 113 miles by truck?" By water this is 43% longer.

A comparison of this feature with other rivers will give a basis for determining whether this would cancel any savings realized by cheaper water rates. The water route from Wilmington to Fayetteville is 47 per cent longer than the highway route and the water route from Savannah to Augusta is 60 per cent longer. Yet both of these rivers carry substantial water freight.

The route that gives a better demonstration of the savings which can be realized from water transportation is the Tombigbee River (previously mentioned) from Birmingham to Mobile, Alabama. The distance between these two cities is 250 miles by land and 460 miles by water.[16] The water route is 84 per cent longer. In addition to this, Birmingham is located about 20 miles from the river and all cargoes must be rehandled and transferred that far by truck to the steel mills and other industries which use the river to move an average of 3,149,803 tons of freight a year.[16]

PRESENT NAVIGATIONAL LIMITATIONS OF THE CONGAREE SYSTEM

There are two places on the Congaree-Santee-Cooper River System where improvements will have to be made if the rivers are to accommodate commercial traffic.

1. Strawberry Landing on the Cooper:

The first of these is the Strawberry Landing Trestle of the Seaboard Railroad across the Cooper River. As previously mentioned, there is evidence that the narrow width of this trestle has cost the State of South Carolina one industry. Also it has hampered, to some degree, the South Carolina Public Service Authority's efforts to use the Cooper River to bring in fuel for its steam plant at Moncks Corner.

This trestle has a horizontal clearance of only 33 feet. The two most widely used waterways barges are 26 and 35 feet wide, with the latter being more desirable.[16a] Thus, this trestle needs to be widened to give a clearance of at least 50 feet.

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[16] 1959 report of U. S. Army Corps of Engineers on Water Resources in Alabama and the highway map of Alabama.

[16a] American Waterways Operators, Inc.

The Truman-Hobbs Act of June 21, 1940 provides that the federal government will bear up to 90 per cent of the cost of widening such trestles across navigable streams if it can be demonstrated that a need exists.

2. The Congaree:

The second place for improvement but where more extensive work is necessary is the Congaree itself. The river at Gervais Street is about 1,000 feet wide. Below Columbia it narrows considerably which tends to deepen the channel. Judging from other areas, it would seem that further contraction of the channel by artifical means rather than the establishment of big hydro-turbo dams, would considerably deepen the channel to give it a depth comparable to those of other major navigable streams. Even the Mississippi River, although it is extremely wide, has a rated channel depth of only 9 feet.

Again turning to the Cape Fear River in North Carolina for comparison, three low-head bank-high locks and dams are sufficient to provide a navigable channel for the entire 115 miles from Wilmington to Fayetteville. Probably some such development as this would be all that is necessary to provide a minimum channel the 47 miles from the confluence of the Congaree and Wateree Rivers to Columbia. However, engineering requirements for the Congaree are being extensively studied by the Corps of Army Engineers at this time.

RESULTS OF THIS STUDY

It has already been indicated that the work of the Congaree Study Committee has attracted the attention of some industries who are interested in using its navigational potential. The activities of this committee have also resulted in other developments.

1. U. S. Army Corps of Engineers Study:

Of most importance is the beginning of a two year technical study of the possibility of navigation on the Congaree and Wateree Rivers by the U. S. Army Corps of Engineers. This study, authorized by Congress in 1959, was brought about by the prompt action of the South Carolina Congressional Delegation in response to the interest demonstrated by the General Assembly in creating the two river study committees last year.

Two phases of study were originally contemplated by the Corps of Engineers. Through the efforts of these two legislative committees,

the scope of the first phase has been limited to navigation. As for the second phase, additional funds will have to be appropriated before it can get underway. This second phase concerns comprehensive river development and is not recommended by this committee.

Buckingham Landing Dam:

At the public hearing held by the Corps of Engineers on December 10, 1959 in Columbia when they began their navigational study of the river system, Colonel John R. Thompson, District Engineer, announced that there would be no plan to provide navigation to Columbia and Camden by building a dam at Buckingham Landing at the head of Lake Marion. He said that a previous recommendation of this dam generated a great deal of opposition and proved to the Corps of Engineers that they should not recommend its construction again.

The committee has amassed considerable information on the Santee River System, but ultimately, the staff of the U. S. District Engineer will have to evaluate this information and make its recommendations to Congress. Navigation will depend upon their favorable recommendation.

2. Public Interest:

Although the Congaree River Committee was not charged with promoting navigation, it found its activities excited unexpected interest and a most favorable response. The committee's activities generated a public opinion which is substantially in support of river development.

In the conduct of its study the Committee called together citizens from 10 counties bordering on the Congaree and Wateree Rivers. This meeting was held at Wampee and every available seat was taken. Those in attendance were municipal and county officials and leaders in the development programs of their areas and they were unanimous in support of efforts to open the rivers to navigation.

These groups have assisted this committee in getting together a list of 250 potential users of the river which has been turned over to the State Ports Authority for study. They also sent representatives to the public hearing held by the Corps of Engineers and urged the opening of the river.

3. Timber Interests:

Although a majority of the several hundred people who attended the Corps of Engineers' hearing indicated their support of the project,

it should be stated that certain opposition was expressed. This opposition was chiefly from persons concerned about the possible flooding of the valuable hardwood timber in the Congaree and Wateree Swamps. We believe they were assured that the Corps of Engineers had no plans to revive Buckingham Landing Dam and that the development of navigation would not result in extensive flooding.

4. The Railroads:

Representatives of the railroads were in attendance at the Corps of Engineers' Public Hearing but they declined to comment. We hope they feel that the introduction of additional new water-using industries to our state as a result of navigation and the accompanying additional rail freight would more than offset any loss of rail freight between the Midlands and Charleston.

5. The State Ports Authority:

The State Ports Authority demonstrated its interest, expectations and confidence that the rivers should be opened for commercial navigation by undertaking a survey of industrialists to determine the number of potential river users. The committees established by the General Assembly had neither the personnel nor the finances to undertake such a study, but they felt that a determination of the potential users was an important part of their work. Therefore, having initially gathered 250 names of possible waterways shippers, this list was turned over to the Ports Authority.

Leaders of the Ports Authority repeatedly expressed confidence that the Congaree River can be opened for commercial navigation and that the development of this stream will be well worth the money spent, both to the Midlands area and the Port of Charleston.

6. State Development Board:

Both river committees met jointly with the State Development Board to discuss present plans for navigation. The State Development Board then endorsed the efforts to open the rivers for navigation by stating that their development would contribute substantially to the industrial attractiveness of the state. Their resolution endorsing the project is included in the appendix of this report.

7. Organizational Outgrowths of the Study:

Both the Columbia and Cayce-West Columbia Chambers of Commerce have established special committees to promote river navigation. At the suggestion of the committee's chairman, Industrial Develop-

ment Commission of Columbia and Richland County are now considering two programs. The first is a comprehensive study of the long range effects of river navigation on the economy and industrial growth of the Midlands area. This would be undertaken by a firm which specializes in traffic and transportation studies.

The second is the establishment of a Midlands group, including representatives of all interested counties, to coordinate the development of the central area of the state and work together for the most advantageous use of the water resources.

If the committee accomplishes nothing more than these, it will have justified its existence.

CONCLUSIONS

The Congaree River Study Committee is convinced that navigation between Columbia and Charleston is not only feasible and practical, but is of major importance to the industrial development of the heartland of the state and will be of great benefit to the further development of the Port of Charleston.

We believe that it is important enough to merit the full attention of those agencies, individuals and industries seeking to promote the progress of South Carolina.

We believe that industries, in their steady march South, are now looking at the river basins of South Carolina and that these rivers are the next rivers in line to be called upon to produce and transport goods for coming generations.

We believe that navigation will multiply the attractiveness of these rivers to major water-using industries. There are some who disagree. Some have expressed the opinion that any further development of the rivers would hurt the hardwood industry because navigation would require high dams and extensive flooding of valuable timberlands.

But we again point out that in relatively few river systems have the engineers found it necessary to build high dams to provide navigation so we believe that the Cooper-Santee-Congaree-Wateree River System can be made navigable without expensive hydro-electric dams and extensive flooding of timberlands.

We urge all affected interests and the people of the State to capitalize on the resources and facilities which have already been made available and work for the extension of these facilities so that the full potential of the rivers of South Carolina may be realized.

APPENDIX

STATE DEVELOPMENT BOARD ENDORSEMENT OF THE SCOPE AND OBJECTIVES OF THE CONGAREE AND WATEREE RIVERS NAVIGATION STUDY COMMITTEES OF THE GENERAL ASSEMBLY

February 17, 1960

WHEREAS by Resolutions of the General Assembly, separate Committees have been appointed to study the feasibility and practicability of navigation on the Congaree River and the Wateree River respectively, and

WHEREAS such Committees have initiated studies pursuant to their respective appointments limited to the development of the respective rivers for navigation purposes only, and

WHEREAS it appears that the development of such rivers for navigation will promote and further the industrial development of South Carolina,

NOW THEREFORE the Board hereby approves and endorses the works and purposes of the respective Legislative Committees with respect to the development of the Congaree River and the Wateree River for navigational purposes only.

QUOTES FROM FOLDER OF THE ARKANSAS BASIN DEVELOPMENT ASSOCIATION

"All of the reservoirs pictured here are now under construction, except Markham Ferry, and it soon will be. When completed at a cost of $500 million, they and 12 other reservoirs built in recent years will store the water which will make possible a dependable, year-round, nine-foot navigable channel on the Arkansas and Verdigris Rivers from the Mississippi River to Tulsa.

"It will take 12 or 13 years to complete the $1.2 billion Arkansas Basin project. When it is done America's richest undeveloped valley will be served by ice-free, low-cost water transportation. All history indicates the growth which will follow will stagger the imagination.

"The Corps of Engineers estimates the Arkansas-Verdigris waterway will carry an average of 13.3 million tons of freight annually. There will be a savings of about $8.75 per ton in shipping steel from Pittsburgh to Tulsa. The cost of shipping coal from Fort Smith to New Orleans will be reduced about $2.60 per ton. The freight rate on wheat from Enid to Memphis will be lowered about 11 cents per bushel.

"In addition to reducing freight bills, and making it economically feasible to market the rich storehouse of fuels and minerals in the Arkansas valley, the project will provide protection from floods, hydro-electric power, municipal, industrial and agricultural water supplies, and a vast inland playground.

"Studies made by the Army Engineers indicate that over a period of 50 years, the project wil repay the nation's entire investment with interest and $240 million besides."

PROCEDURE FOR PROCURING FEDERAL FUNDS FOR NAVIGATIONAL DEVELOPMENT

There are twelve steps in the procedure for securing funds for developing a navigation channel as listed in the U. S. Army Corps of Engineers Water Resources Development Brochure covering the State of Alabama, January 1959:

1st Step—Congress must authorize funds for a study by the U. S. Army Corps of Engineers. In the case of the Congaree River, this has already been done.

2nd Step—The study must be made. District Engineers are now in the process of studying the Congaree and Wateree Rivers.

3rd Step—The results of the study and recommendations are turned over to the Division Engineers in Atlanta, who evaluate the report and either concur with or reject the district engineers' recommendations.

4th Step—The study is then sent to the Chief of Engineers in Washington, who again evaluates and agrees or disagrees.

5th Step—Next it is reviewed by the National Rivers and Harbors Board which must also pass on the subject.

6th Step—From the Board of Rivers and Harbors, the project is taken to the Secretary of the Army for his review.

7th Step—The Secretary of the Army makes his recommendations to the Public Works Committee of the U. S. Congress.

8th Step—The House of Representatives passes the Rivers and Harbors Bill including the recommended project.

9th Step—The Senate passes the bill.

10th Step—The President signs the bill into law and the funds are made available by the Bureau of the Budget.

11th Step—The District Engineers prepare plans and estimate the cost of the project.

12th Step—Contractors are invited to submit bids, the contract is let and construction starts.

THE ATLANTA JOURNAL WRITERS DISCUSS LOC

BACKED BY ENGINEERS

Optimists Believe Barges Will Dock One Day at Atlanta Port

By LUKE GREENE

LIKE THE blind man who felt the elephant, one can draw all kinds of impressions about the Chattahoochee River and the part that it will play in the future development of Georgia.

To the fisherman it may be just a pleasant stream. The boater may be charmed by the prospect of more lakes. The industrialist will probably view it in terms of kilowatts.

The skeptic may be prompted to ask: "Is all this talk about one day making the river navigable to Atlanta just a pipe dream or is it possible of attainment?"

A NEW WAVE

Along the lower reaches of the river these days things are happening that should send a new wave of optimism coursing up the river all the way to Atlanta, offering new hope for those who doubt.

Dams are creating a series of stairsteps in that area where the drop in elevation is so great that navigation might, at first, appear to be impossible.

Yet Columbus is getting set to bring barges to that point on the river by late 1962.

And just the other day the Georgia Power Co. dedicated the new Oliver Dam on the northern outskirts of Columbus, a project that forges a powerful link in the river chain.

Apparently the power company is not taking this business about navigation with a grain of salt, because it has built into this giant structure provisions for the future installation of navigation locks.

If the dream of navigation into Atlanta has no basis in fact, then a lot of speakers at the dedication ceremonies were speaking recklessly. Many of them referred to the long-range plan for waterway traffic as far north as Atlanta.

The thing that must be remembered, however, is that the Lower Chattahoochee was not developed to the point that it is today without a great deal of vision, patience and plain hard work.

There was organization and there was enthusiasm, even though at times the progress was slow.

The fever is spreading northward. Already we have a Middle Chattahoochee Development Assn. dedicated to the task of building the dams that will be necessary between West Point and Atlanta.

The optimists, backed by findings of engineers, believe that one day other dams will rise along the Middle Chattahoochee, that locks will be constructed and that the barges and river boats will find their way into Atlanta.

Looking at the Oliver Dam and its impounded waters that stretch for eight and one-half miles, it's easy to believe that all of this will come to pass, in time.

GENERATE ELECTRICITY

The immediate purpose of the Oliver Dam, of course, is to generate more electricity to feed Georgia Power's constantly expanding system. It will furnish enough power to supply the normal requirements of 65,000 average homes.

This is the third largest hydroelectric plant in the system, exceeded only by Tallulah Falls in north Georgia and Bartlett's Ferry on the Chattahoochee. It cost $14,400,000 to build.

It has the distinction, too, of being the first hydroelectric plant in Georgia designed for remote control. The stopping and starting of turbines and other machinery will be handled by automatic equipment at Bartlett's Ferry, 14 miles away. In this respect it is a study in automation.

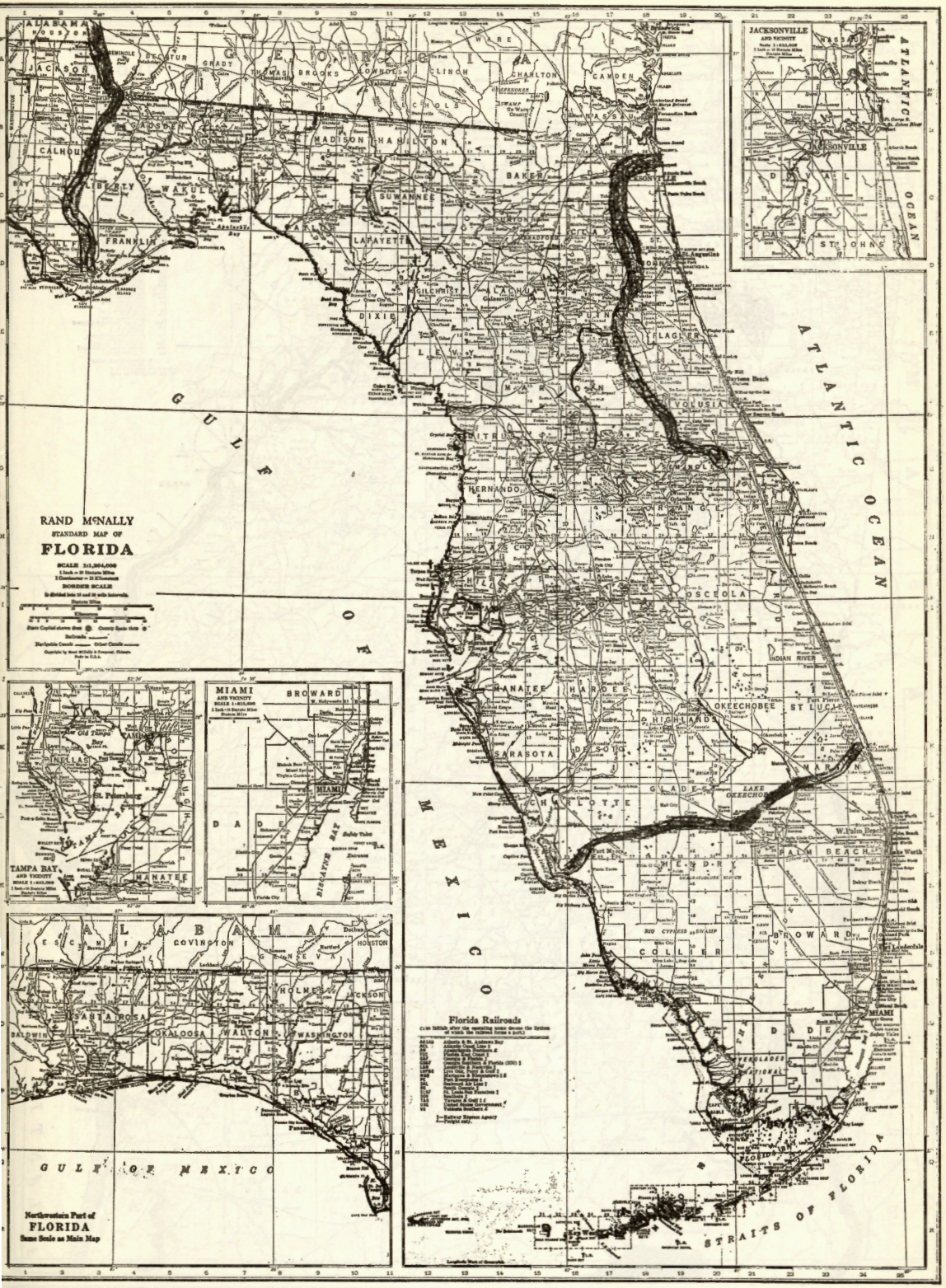
The quiet, gentle man for whom it is named, James D. Oliver, had his own vision of the future when he, speaking at the dedicatory ceremonies, said it would take a lot of planning, engineering, money and construction to meet the needs of this area.

It's up to far-sighted men to carry on the job of harnessing the river's resources for navigation, power, recreation and flood control.

Constitutional Rights?

Farm Journal

THE AVERAGE woman is satisfied if she has a roof over her head and the right to raise it whenever she feels like it.


RAND McNALLY
STANDARD MAP OF
FLORIDA
SCALE 1:1,584,000
1 Inch = 25 Statute Miles
1 Centimeter = 15.8 Kilometers
BORDER SCALE
Statute Miles
Kilometers
Railroads
Interstate Canals
Other Canals
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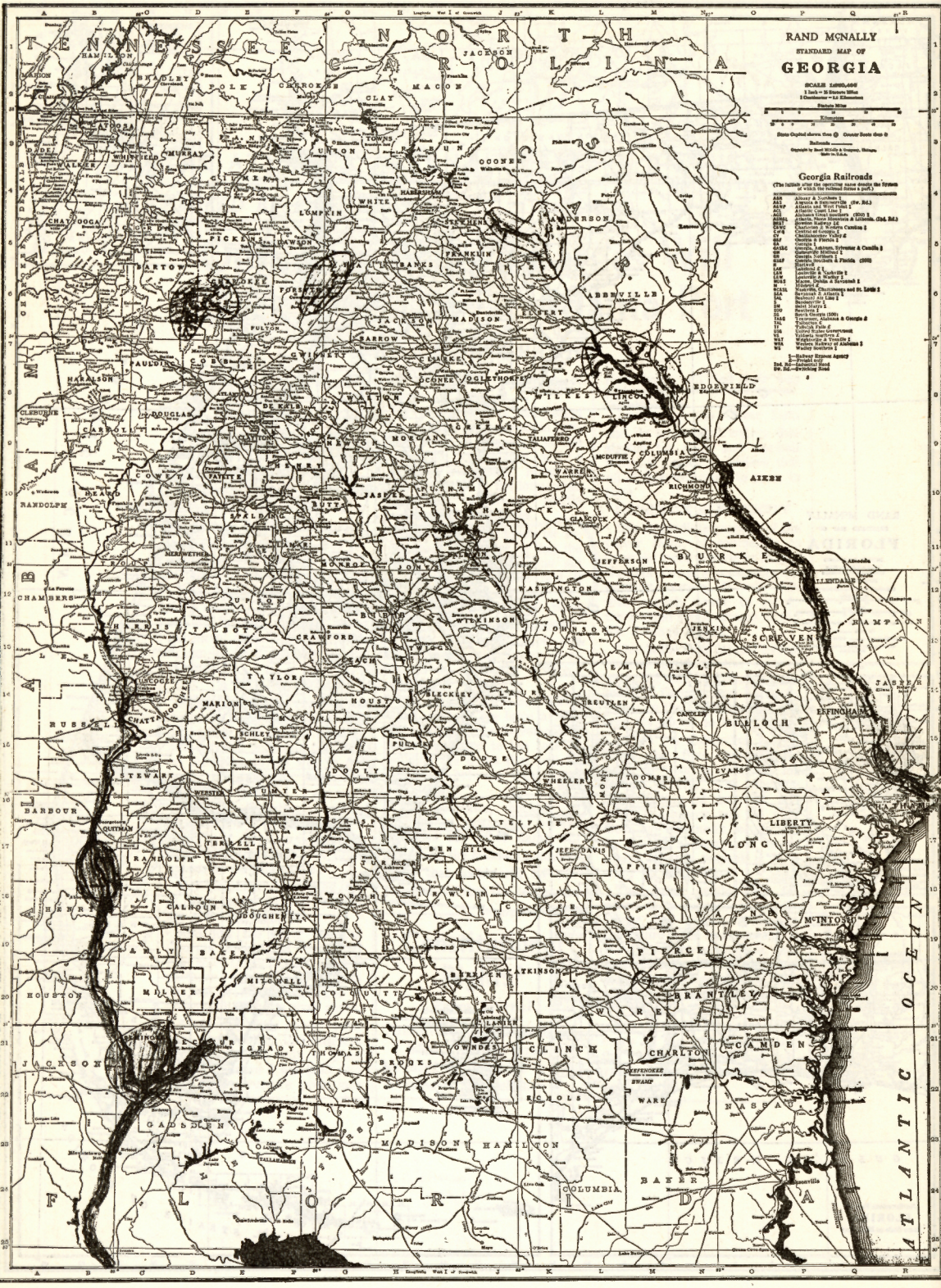
JACKSONVILLE
AND VICINITY
Scale 1:633,600
1 Inch = 10 Statute Miles
Statute Miles
JACKSONVILLE
ST. JOHNS
ATLANTIC OCEAN
MIAMI
AND VICINITY
SCALE 1:633,600
1 Inch = 10 Statute Miles
Statute Miles
BROWARD
MIAMI
DADE
BISCAYNE BAY
Florida City
TAMPA BAY
AND VICINITY
SCALE 1:633,600
1 Inch = 10 Statute Miles
Statute Miles
PINELLAS
HILLSBOROUGH
MANATEE
St. Petersburg
Tampa
Old Tampa Bay
Hillsborough Bay
Boca Ciega Bay
Tampa Bay
Northwestern Part of
FLORIDA
Same Scale as Main Map
ALABAMA
ESCAMBIA
SANTA ROSA
OKALOOSA
WALTON
HOLMES
WASHINGTON
JACKSON
BALDWIN
COVINGTON
HOUSTON
GULF OF MEXICO
Florida Railroads
GULF OF MEXICO
ATLANTIC OCEAN
STRAITS OF FLORIDA
ALABAMA
GEORGIA
FLORIDA
GULF
MADISON
HAMILTON
SUWANNEE
LAFAYETTE
GILCHRIST
LEVY
DIXIE
TAYLOR
JEFFERSON
LEON
WAKULLA
FRANKLIN
GADSDEN
CALHOUN
LIBERTY
BAY
JACKSON
DECATUR
GRADY
THOMAS
BROOKS
LOWNDES
CLINCH
CHARLTON
CAMDEN
NICHOLS
BAKER
UNION
BRADFORD
CLAY
DUVAL
NASSAU
ST. JOHNS
PUTNAM
ALACHUA
MARION
FLAGLER
VOLUSIA
CITRUS
HERNANDO
SUMTER
POLK
PASCO
OSCEOLA
ORANGE
SEMINOLE
BREVARD
INDIAN RIVER
OKEECHOBEE
ST LUCIE
MARTIN
HIGHLANDS
HARDEE
MANATEE
DESOTO
SARASOTA
CHARLOTTE
GLADES
LAKE OKEECHOBEE
HENDRY
COLLER
BIG CYPRESS SWAMP
PALM BEACH
BROWARD
DADE
MIAMI
EVERGLADES NATIONAL PARK
FLORIDA BAY


RAND McNALLY
STANDARD MAP OF
GEORGIA
SCALE 1:500,000
1 Inch = 8 Statute Miles
1 Centimeter = 5 Kilometers
Statute Miles
Kilometers
State Capital shown thus ◎ County Seats thus ⊙
Railroads
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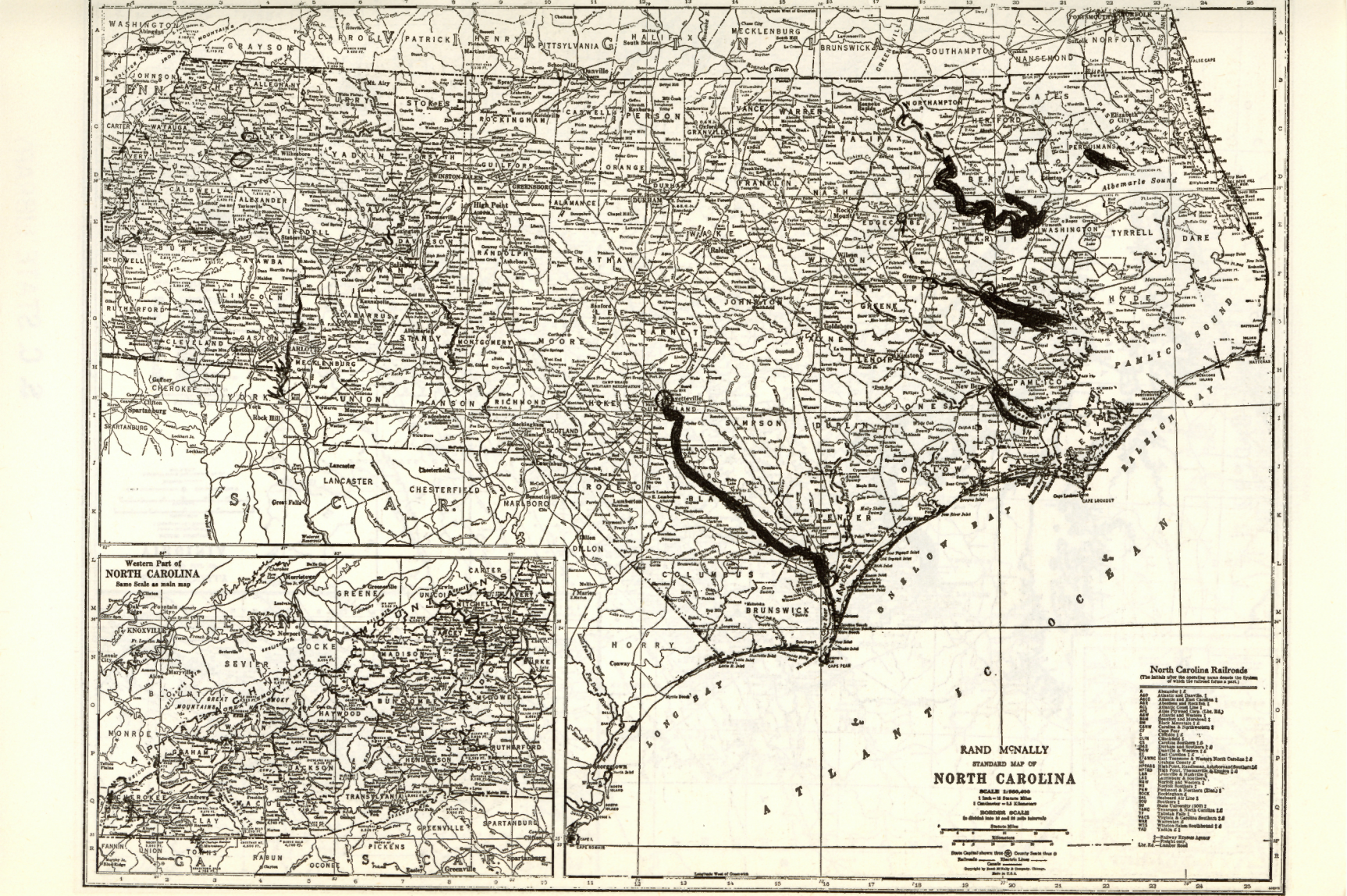
Made in U.S.A.
Georgia Railroads
(The initials after the operating name denote the System of which the railroad forms a part.)
ABR Albany & Northern 1
AB Albany & Vicksburg (Ste. Rd.)
ACNP Atlanta and West Point 2
ACL Atlantic Coast Line 2
AK Atlanta, Knoxville & Northern (Sou.) 2
ASRRL Atlanta, Nacoochee & Northern & Lithonia. (Ind. Rd.)
BRE Benton Railway Co.
CSNC Charleston & Western Carolina 2
CRR Central of Georgia 2
CS Charlotte, Columbia & Augusta 2
CRF Charlotte & Florida 2
CO Columbus & Greenville
GSSAC Georgia, Southern, Sylvester & Camilla 2
GM Gainesville Midland 1
GN Georgia, Northern 1
GSAF Georgia, Southern & Florida (Sou.) 2
GRT Gratonia
GF Louisville & Nashville 2
LEX Louisville & Nashville 2
MON Macon, Dublin & Savannah 2
M Midland
NC&StL Nashville, Chattanooga and St. Louis 2
NGA Nacoochee & Atlantic 1
NAL Nashville Air Line 2
NR Nashville 1
PA Perkins Ry. 1
SOU Southern 2
SC South Georgia (Sou.) 2
TAG Tennessee, Alabama & Georgia 2
TT Tifton Terminal
TF Tybrisa Farm
UGR United States Government
WC Wadley Southern 1
WAY Washington & Vesuvius 2
WRA Western Railway of Alabama 2
WS Wadley Southern 2
Ry.—Railway Express Agency
Rd.—Private Road
Ind. Rd.—Industrial Road
Dr. Rd.—Driveway Road
TENNESSEE
NORTH CAROLINA
SOUTH CAROLINA
ALABAMA
FLORIDA
ATLANTIC OCEAN
CHATTANOOGA
ATLANTA
AUGUSTA
SAVANNAH
MACON
COLUMBUS
ALBANY
ROME
GAINESVILLE
DALTON
CLEVELAND
CARTERSVILLE
MARIETTA
DECATUR
GRIFFIN
NEWNAN
LAGRANGE
CARROLLTON
DOUGLASVILLE
McDONOUGH
JONESBORO
FAYETTEVILLE
PEACHTREE CITY
CONYERS
LAWRENCEVILLE
DULUTH
BUFORD
CUMMING
CANTON
WOODSTOCK
ACWORTH
KENNESAW
MARIETTA
SMYRNA
EAST POINT
COLLEGE PARK
HAPEVILLE
FOREST PARK
UNION CITY
FAIRBURN
SENOIA
MOLENA
THOMASTON
BARNESVILLE
ZEBULON
GRANTVILLE
HOGANSVILLE
CARROLLTON
BOWDON
BREMEN
TALLAPOOSA
BUCHANAN
TEMPLE
VILLA RICA
BOWDON JUNCTION
WHITESBURG
CARROLLTON
ROOPVILLE


Western Part of
NORTH CAROLINA
Same Scale as main map
RAND McNALLY
STANDARD MAP OF
NORTH CAROLINA
SCALE 1:500,000
1 Inch = 8 Statute Miles
1 Centimeter = 5.1 Kilometers
NORMAL SCALE
North Carolina Railroads
Albemarle Sound
Pamlico Sound
Raleigh Bay
Onslow Bay
Long Bay
ATLANTIC OCEAN
WASHINGTON
GRAYSON
PATRICK
HENRY
PITTSYLVANIA
HALIFAX
MECKLENBURG
BRUNSWICK
SOUTHAMPTON
NORFOLK
NANSEMOND
JOHNSON
ALLEGHANY
SURRY
STOKES
ROCKINGHAM
CASWELL
PERSON
VANCE
WARREN
GRANVILLE
NORTHAMPTON
GATES
CHOWAN
PERQUIMANS
CARTER
WATAUGA
WILKES
YADKIN
FORSYTH
GUILFORD
ORANGE
DURHAM
FRANKLIN
NASH
HALIFAX
BERTIE
AVERY
CALDWELL
ALEXANDER
DAVIE
IREDELL
ALAMANCE
EDGECOMBE
WASHINGTON
TYRRELL
DARE
McDOWELL
BURKE
CATAWBA
DAVIDSON
RANDOLPH
WAKE
MARTIN
HYDE
RUTHERFORD
LINCOLN
GASTON
CLEVELAND
STANLY
MONTGOMERY
MOORE
JOHNSTON
GREENE
LENOIR
CRAVEN
PAMLICO
CHEROKEE
YORK
UNION
ANSON
RICHMOND
HOKE
SCOTLAND
SAMPSON
ONSLOW
SPARTANBURG
LANCASTER
CHESTERFIELD
MARLBORO
ROBESON
BLADEN
PENDER
DILLON
COLUMBUS
BRUNSWICK
HORRY
CAPE FEAR
CAPE LOOKOUT
KNOXVILLE
GREENE
CARTER
UNICOI
MITCHELL
AVERY
MADISON
YANCEY
SEVIER
BLOUNT
HAYWOOD
BURKE
CALDWELL
MONROE
GRAHAM
MACON
JACKSON
HENDERSON
RUTHERFORD
POLK
TRANSYLVANIA
GREENVILLE
SPARTANBURG
FANNIN
UNION
TOWNS
RABUN
PICKENS
OCONEE
Spartanburg
Greenville